PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

Applicant's or agent's file reference 8477	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application number PCT/EP2004/013293	International filing date (day/month/year) 24/11/2004	Priority date (day/month/year) 11/12/2003
International Patent Classification (IPC) or national classification and IPC B29C47/08		
Applicant WINDMÖLLER & HÖLSCHER KG et al.		

1.This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. [ ] *(sent to the applicant and to the International Bureau)* a total of ( ) sheets, as follows:

[ ] sheets of the description, claims and/ or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

[ ] sheets which supersede earlier sheets, but which this Authority considers to contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box no. 1 and the supplemental box.

b. [ ] *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) .... containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
- [x] Box No. I Basis of the report
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statements
- [x] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

Date of submission of the demand 28. June 2005	Date of completion of this report 24. February 2006
Name and mailing address of the IPEA: European Patent Office D-80298 Munich Tel. +49 89 2399 – 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer: Mans, P Tel. +49 89 2399-7236 [seal:] European Patent Office

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Form PCT/IPEA/409 (cover sheet) (January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application number
PCT/EP2004/013293

Box Number I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless stated otherwise under this item.
   [ ] The report is based on a translation from the original language into the following language, which is the language of the translation furnished for the following purposes:
   [] international search (Rules 12.3 and 23.1 (b))
   [] publication of the international application (Rule 12.4)
   [] international preliminary examination (Rules 55.2 and/or 55.3)

2. With regard to **the elements*** of the international application this report is based on (*replacement sheets which have been furnished to the receiving office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, pages

1 – 7 as originally filed

Claims, numbers
1 – 9 received on January 16, 2006, with the letter dated January 16, 2006

Drawings, sheets
1/5 – 5/5 as originally filed

[] a sequence listing and/or any related table(s)—see Supplemental Box Relating to Sequence Listing

3. [] The amendments have resulted in the cancellation of
   [] the description: pages
   [] the claims: numbers
   [] the drawings: sheets/figures
   [] the sequence listing (*specify*):
   [] any table(s) related to sequence listing (*specify*):

4. [] This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).
   [] the description: pages
   [] the claims: numbers
   [] the drawings: sheets/figures
   [] the sequence listing (*specify*):
   [] any table(s) related to sequence listing *(specify):*

If item 4 applies, some or all of these sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application number
PCT/EP2004/013293

Box number V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims No: Claims 1 - 9
Inventive step (IS)	Yes: Claims: No: Claims: 1 - 9
Industrial applicability (IA):	Yes: Claims: 1 – 9 No: Claims

2. Citations and explanations (Rule 70.7):
   See annex

Box number VI Certain documents cited

1. Certain published documents (rule 70.10)
   and/or
2. Non-written disclosures (rule 70.9)
   see annex

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Annex) International application number
PCT/EP2004/013293

Item V

The applicant's attention is drawn to the following documents:
D1: US-A-3 802 670 (OKADA T, JA ET AL) 9 April 1974 (1974-04-09)
D2: US 2004/223403 A1 (SCHUNK HOLGER e.a) 11 November 2004 (2004-11-11)
D3: WO 2004/005005 A (SIEMENS AKTIENGESELLSCHAFT; SCHUNK, HOLGER; TSCHANTER, ANDREAS; KRESS), 15 January 2004 (2004-01-15)
D4: DE 103 29 035 A1 (BATTENFELD SERVICE GMBH) 27 January 2005

The essential feature of the application is that the torque transmission point in the axial direction is located outside the rotor!
This is the case in D1 (US-A-3 802 670) as well as in D2 and D4. In D3 the bushing components 5 and 6 are located (only) partially outside the rotor.

- Since claim 1 of the application discusses the drive motor (1) (only in general terms), it is irrelevant that D1 does not present an electric motor.
- Since the extruder in D1 was assembled (not flush fitting), it follows logically that it can be disassembled again, i.e., can be "detached." The question with regard to the complexity is an entirely different issue altogether.
- In the area 63 the end of the worm is very clearly encompassed by a jacket of the rotor. In this respect indents 4 and 5 of the preamble ARE fulfilled.

1. Novelty
1.1 Independent Claim 1

The document D1 (US-A-3 802 670), similarly D4—as well as in the broader sense D3, see above—is regarded as the closest prior art with respect to the subject matter of the independent claim 1. D1 discloses, for example, in Figure 1 an extruder device ("continuous mixer for thermoplastic resin") comprising

- an extruder worm and
- a worm drive, which
- includes a drive motor, which in turn
- exhibits a rotor, which
- is connected to the extruder worm in such a manner during operation that the rotor and the extruder worm rotate at the same speed during operation and
- which can be connected to detachable torque-transmitting elements (to the extruder worm),

  which transmits torque between the rotor and the extruder worm and can be detached when retrofitting work occurs,

- the detachable torque-transmitting elements include a torque transmission point, at which the torque is transferred by a bushing to a connecting section (of the worm), which is at least partially encompassed by the bushing,
- the bushing is fastened on the face side of the rotor, and
- the torque transmission point in the axial direction is located outside the rotor.

Since both D1 and D4 – as well as in the broader sense D3: the connection of the bushing components 5 and 6 is located outside - disclose all of the features (in particular that the bushing is fastened to a face side), the independent claim 1 may, therefore, not be regarded as novel within the meaning of Article 33 (2) PCT.

1.2 Dependent claims 2 to 8
The dependent claims 2 to 8 disclose in their entirety features that can be derived from the current prior art in this form and/or in connection with the patent that is sought. Therefore, they may not be regarded as novel within the meaning of Article 33(2).

Claim 2: D1, Figure 2b, part 10, as well as D4, Figure 1, part unnamed, show that the bushing as well as the connecting section are located completely outside the rotor. D3, Figure 1, part 5 and 6, show that the connecting section of the bushing that is essential for disassembly is located outside.

Claim 3: D1, Figure 1, as well as D2, Figure 1, show that the torque-transmitting elements 63 are arranged between the rotor and the extruder worm.

Claim 4: D1 as well as D2 show that the torque-transmitting elements include a screw connection 10 that runs in the axial direction and with which the bushing and the connecting section can be connected so as to be rotationally rigid.

Claim 5: D1 (Figure 2b for part 10) shows that at least one of the torque-transmitting elements is at least partially surrounded by a housing, with is rigidly connected to the housing of the extruder worm.

Claim 6: D1 shows that the housing of the drive motor is connected detachably to the housing,

which at least partially encompasses the torque-transmitting elements.

Claim 7: D1 shows that at least one of the torque-transmitting elements is braced at the encompassing housing by means of roller bearings and/or ball bearings 33, 53, 57.

Claim 8: D2 shows that the roller bearing is an angular contact bearing 13 that can absorb axial forces. D3 shows that angular contact bearings 8 are typical in this field.

Claim 9: D1 shows that said at least one torque-transmitting element is the bushing.

2. Inventive Step

2.1 Independent Claim 1

Since, moreover, the features of claim 1 are not regarded as novel, there is no need for an examination regarding the inventive step.

2.2 Dependent Claims 2 to 8

The dependent claims 2 to 8 do not reveal—in combination with the features of the independent claim 1—any feature that discloses or shows an inventive difference over the prior art. It is obvious that they include only simple structural measures, which do not show that and to what extent they are based on an inventive step. Therefore, the claims do not fulfill the requirements of Article 33 (2) and (3) PCT with respect to novelty and/or inventive step.

3. Industrial Applicability:

3.1 From the viewpoint of the current examination no objections are raised with respect to the industrial applicability of the subject matter of the present application.

8477 WO – WEB
Windmöller & Hölscher KG
Münsterstrasse 50
49525 Lengerich/Westphalia

January 16, 2006

Our reference: 8477 WO – WEB

Directly Driven Extruder With an Adapter

Patent Claims

1. Extruder device with an extruder worm (4) and a worm drive (1, 2),
   - which (1, 2) includes a drive motor (1),
   - which exhibits a rotor (8),
   - which during operation is connected to the extruder worm (4) in such a manner that the rotor (8) and the extruder worm (4) rotate at the same speed during operation and
   - which can be connected to detachable torque-transmitting elements (6, 14, 15), which transmit torque between the rotor (8) and the extruder worm (4) and which can be detached when retrofitting work occurs,
   - where the detachable torque-transmitting elements (6, 14, 15) include a torque transmission point, at which torque is transmitted from a bushing (14) to a connecting section (6), which is at least partially encompassed by a bushing (14) ,

   characterized in

   - that the bushing is fastened on a face side of the rotor, and
   - that the torque transmission point in the axial direction is located outside the rotor (8).

2. Extruder device, as claimed in claim 1,

   characterized in that

   both the bushing and the connecting section are located completely outside the rotor.

3. Extruder device, as claimed in any one of the preceding claims,
characterized in that
the torque-transmitting elements (6, 14, 15) are arranged between the rotor (8) and the extruder worm (14) [sic].

4. Extruder device, as claimed in any one or several of the preceding claims,
characterized in that
the torque-transmitting elements (6, 14, 15) include a screw connection (15) that runs in the axial direction and with which the bushing (14) and the connecting section (6) can be connected so as to be rotationally rigid.

5. Extruder device, as claimed in any one or several of the preceding claims,
characterized in that
at least one of the torque-transmitting elements (6, 14, 15) is at least partially encompassed by a housing (16), which is rigidly connected to the housing (5) of the extruder worm (4).

6. Extruder device, as claimed in claim 5,
characterized in that
the housing (12) of the drive motor (1) is connected detachably to the housing (16), which at least partially encompasses the torque-transmitting elements (6, 14, 15).

7. Extruder device, as claimed in claim 5 or 6,
characterized in that
at least one of the torque-transmitting elements (6, 14, 15) is braced against the encompassing housing (16) by means of roller bearings and/or ball bearings (17).

8. Extruder device, as claimed in the preceding claim,
characterized in that
the roller bearing (17) is an angular contact bearing, which can absorb the axial forces.

9. Extruder device, as claimed in any one of the two preceding claims,

characterized in that
said at least one torque-transmitting element (6, 14, 15) is the bushing (14).